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HB 36
RELATING TO WATERSHEDS

Statement for
House Committee on
Water, Land Use and Development
Public Hearing - February 7, 1989

By
Doak Cox, former Director of Environmental Center

The attached statement submitted to the Environmental Center by Dr. Doak Cox, former Director of the Environmental Center and Professor Emeritus of Geology and Geophysics is submitted in its entirety due to the detailed nature of its content. The statement does not represent an institutional position of the University of Hawaii.

Attachment

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Memo to Jaquelin Miller, UH Environ.Ctr.

From Doak Cox



HB 36

HB 36 would add to HRS 174C a new part, designated "Watershed Management", that would allow the state Commission on Water Resource Management (Commission) to designate certain watershed areas as "hydrographic areas" and would provide that the responsibilities for the management of those areas be transferred to the Commission from the Board of Land and Natural Resources (BLNR). Because the bill would thus provide the Commission with the power and duty to enlarge its own authority at the expense of the authority of the BLNR, there should be a clear expression of appropriate criteria for the designation of the "hydrographic areas". For the same reason, because the Commission has not yet responded completely to all of the responsibilities that it was given initially, and because the additional responsibilities proposed for the Commission include a managerial responsibility different in nature from its present responsibilities; there should be a clear expression of a strong rationale for the transfer of power. Neither the rationale nor the criteria are clear in the bill, and there are alternative means for coping with the problems it implies that seem preferable, at least in the immediate future.

Evidences of rationale and criteria

In provision for designation of "hydrographic areas"
and definitions

Proposed subsection 203 on the "Designation of hydrographic areas" specifies merely that: "The commission shall identify all watershed lands and shall designate hydrographic areas for the purpose of establishing management control over such areas". This subsection does not, in itself, specify that the power to manage the "hydrographic areas" should be transferred to the Commission; it implies that a "hydrographic area" is a "watershed", and it provides merely the indirect hint that the criterion for designation a "hydrographic area" is that it is a "watershed" or part of a "watershed" requiring management that is in some way special.

The term "watershed" is placed in quotation marks above because the term is defined in a restricted sense in proposed section 201. In a general way all lands are watershed lands, but only lands serving as watersheds for surfacewaters used for domestic water supply or as recharge areas for groundwaters used similarly qualify as "watersheds" as the term is used in the bill. The term "hydrographic area" is also defined in proposed section 201 but the definition is simply in terms of the designation provided for in proposed section 203 and hence adds nothing to that latter section.

It should be noted that the identification of lands that serve as significant watersheds for surfacewaters and significant infiltration areas for groundwaters is the subject of many reports, and that all watershed lands are already subject to governmental management to some degree. With respect to watershed areas in general, it would seem appropriate in the equivalent of proposed section 203 merely to instruct the Commission to review the conditions in such areas generally for the specific purpose of identifying for which of the areas there is need for management controls that are different or more stringent than those currently provided.

In proposed Commission powers and duties

Proposed subsection 202 on "Commission powers and duties" contains eight subsections relating respectively to the following:

- (1) Designation of the "hydrographic areas" over which the commission would have management control, and the setting of policies for use of those areas;
 - (2) Identification and inventory of important watershed lands and development of a management plan for the hydrographic areas;
 - (3) Identification of "at risk areas" and determination of maximum populations supportable by the water supplies serving such areas;
 - (4) Development of incentives for private landowners to protect watershed areas and dedicate them (presumably to watershed use);
 - (5) Control weeds and remove ungulates from important watersheds under state control;
 - (6) Establishment of methods to produce income for funding the management of watersheds;
 - (7) Development of educational programs concerning watershed importance;
- and
- (8) adoption and enforcement of rules to implement HRS chapter 174C.

The first of these subsections specifies that it is the Commission that is to have the power of management for the "hydrographic areas", but it does provides neither insight as to the rationale for the transfer of the power from BLNR nor criteria for the designation of the areas.

The second proposed subsection relates to two distinctive duties. The comments on section provided above on Section 203 are pertinent to the first of these duties, that relating to the identification and inventory of "important watershed lands". The second duty, to "develop a management plan for the hydrographic areas" is so similar to the duty to "set policies governing all planning and development decisions that will affect such areas" that is set forth in the first subsection that the two duties should be set forth in a single subsection even if they need to be distinguished. It should be noted that the broadest and most fundamental policies affecting watersheds should be set by the Legislature, and that more detailed policies might quite properly be considered set forth in a management plan.

The "at risk areas" to which proposed subsection 3 relates are nowhere defined but by implication are areas in which the population has exceeded or is approaching the maximum supportable by the water supplies serving them. There is the implication in this subsection that the criteria for identifying areas in which special management controls are necessary are related in some

manner to the concept of carrying capacity, to be discussed later in this review. It should be noted, however, that the areas in which population is concentrated are, in general, not significant watershed areas, and hence that they could not be identified as "hydrographic areas".

The watersheds to which proposed subsections (4), (6) and (7) relate and even the "important" watersheds to which proposed subsection (5) relates are not identified in the bill as "hydrographic areas". Hence these subsections would provide the Commission with powers and duties overlapping those of the BLNR.

In findings and purpose

According to the first section of HB 36, the purpose of the act it would establish is "to ensure protection of the state's watersheds by the proposed transfer of watershed management responsibility from BLNR's land management and forestry divisions to the Commission. That first section presents a finding that important watersheds have been degraded by feral animals, grazing, destructive plants, fire, and development. It is not shown, however, that the inadequacy in watershed management allowing this degradation would be remedied by transfer of the responsibility for watershed management, although it is implied that that the inadequacy may in part be the result of a conflict of interest on the part of the land management division which is engaged not only in the management of watershed areas but their leasing.

There are implications as to the rationale for establishing the "hydrographic areas" and criteria for their designation in other findings expressed in the first section of HB 36. These other findings are summarized and discussed below:

(a) In some areas, aquifers are unable to supply sufficient water to support the populations dependent on them. This finding pertains to the carrying capacity concept mentioned in connection with proposed subsection 202-(3) that will be the subject of further discussion later in this review.

(b) A sophisticated system for projecting the impact future development on the water resources is lacking. It is true that, in planning, there has sometimes been inadequate concern with limitations to the sustainable yields of water resources and even, on occasion, reliance on overestimates of sustainable yields. It also true that the sustainable yields cannot be estimated precisely. It is, however, not true that methods do not exist for the estimation of both future water demands and the sustainable yields of water resources. Furthermore, a change in the assignment of responsibility for watershed management can do nothing to enhance the methods and may do nothing to extend their utilization.

(c) Some municipal water supplies are adversely affected by salt water intrusion into the supplying aquifers. The general nature of the effects of saline encroachment in basal aquifers in Hawaii has been known for more than half a century. Their reduction is not directly amenable to improvements in watershed management.

(d) The watersheds to which certain of the findings relate (it is not clear which findings) "should be protected and used only for water reinjection

and flood and erosion control". The term "reinjection" is here used inappropriately. With the substitution of the term probably intended, groundwater recharge, the finding would be valid in the case of some watershed areas. However, other uses are compatible with the use of most watershed areas for the supply of surfacewater and groundwater.

Sustainable yields of water-resources and their carrying-capacity implications

About a decade ago, there was considerable interest in the State administration in the concept that there were definite limits to the carrying capacity of the natural resources of the state, that is limits to the sustainable population imposed by natural-resource limitations and, specifically, limitations to water-resource sustainable yields. Although there is considerable validity to the carrying-capacity concept, it was considered for a time to imply carrying capacities that were much less dependent on external conditions, on economic tradeoffs, and on value judgments, and much more subject to precise estimation, than is actually the case. Although the concept is not only valid but useful in a general way in planning, it seems rarely to be mentioned now in state planning, probably having fallen into disfavor when its complexities and inexactness were recognized.

A maximum population supportable by the water supplies serving it, such as one of those whose determination for "at risk" areas would be required by subsection 202(3), would be a carrying capacity set by the limitations to the sustainable yield of the available water resources; the finding that there are areas in which "aquifers are unable to supply the water required by the populations they serve" implies that such a carrying capacity is exceeded in some areas; and a system "to properly project the impact of future developments on ..water resources" such as considered lacking in the findings would be, essentially, a method for carrying capacity analysis.

Although the water resources potentially available to a community are not necessarily limited to those serving it at any particular time, and although definitive carrying capacities cannot be determined for any particular water resources, the sustainable yields of the water resources developed for and potentially developable for present and planned communities should certainly be taken into account in planning processes. It would seem quite appropriate to provide the Water Commission with responsibility for assuring that water-resource sustainable yields are estimated and that the estimates are used in planning. The coupling of this responsibility with a responsibility for direct watershed management such as proposed in HB 36 is unnecessary, and seems undesirable at least at present.

Terminology of watersheds requiring special management

Some decades ago, the term "hydrographic" was used in Hawaii more or less as the equivalent of "hydrologic" with reference to fresh water resources, as in the title of the "Hydrographic Division", predecessor to the Division of Water and Land Development of the Department of Land and Natural Resources. IAs used generally now, here and elsewhere, the term refers to the descriptions of shorelines and the depths of coastal waters. In any case the term "hydrographic area", in itself, does not in any way hint at the usage

proposed in; HB 36 -- a watershed area designated as requiring special management. It would seem appropriate to refer to such an area by a more appropriate term -- one suggesting the purpose of the designation -- whether the responsibility for managing the area were to be transferred to the Commission or remain with BLNR. Because the primary purpose of the special management would be to optimize the water supply capacities of such an area, an alternative that should be considered is "water reserve"